

WORKING DRAFT 6/01/2006

To provide Comments on this DRAFT policy, please email:
John Furman furk235@LNI.wa.gov

WISHA REGIONAL DIRECTIVE

DOSH Services

Department of Labor and Industries

WRD 11.20

APPLICATION OF STANDARDS TO ADDRESS HEAT RELATED ILLNESS IN THE OUTDOOR ENVIRONMENT

I. Background

Heat related illness is a well known, recognized workplace hazard. All work operations involving exposure to temperature and humidity extremes have the potential for inducing heat stress and heat related illness¹.

The current standard, WAC 296-62-09013, *Temperature Extremes*, addresses indoor heat related illness. On April 19, 2006, the Department of Labor and Industries (L&I) announced its decision to issue an emergency rule modifying this existing standard to expand its application to the outdoor environment. This emergency rule is effective June 1, 2006.

Any employer that has employees who do work in moderate to high temperature and/or humidity conditions, and that elevates the heart rate and causes increased perspiration, needs to be prepared for potential heat related illness (HRI). There are four rules which, when implemented and followed, will reduce the risk of heat induced stress/illness. Those rules are:

¹ Washington State Department of Labor & Industries. WISHA Technical Manual, Section 2, Heat Stress

- Evaluate if heat could be a problem on a particular day based on temperature and humidity levels, and then implement adequate controls, methods or procedures to reduce the risk of HRI, per **WAC 296-62-09013**.
- The Accident Prevention Program (APP) must address the provisions that will be put in place to reduce the potential for heat related illness/stress and when to implement those provisions (such as a training program informing employees about the effects of heat stress, health conditions that may increase risk, implementing an acclimatization program, establishing provisions for a work/rest regimen so that exposure time to high temperatures and/or the work rate is decreased, providing access to areas that will provide for cooling down when necessary, etc.) This is per **WAC 296-800-140** or the applicable vertical standard (see Appendix B for additional standards that apply).
- Provide and encourage workers to drink adequate amounts of safe drinking water. This is per **WAC 296-800-23005** or the applicable vertical standard.
- Ensure appropriate first aid is available. Teach employees to recognize heat-related illness symptoms and take steps to prevent heat-induced illnesses. Have specific procedures to be followed for employees exhibiting symptoms of heat-related illness and ensure prompt medical attention. This is per **WAC 296-800-15005** or the applicable vertical standard.

II. Scope and Application

This WISHA Regional Directive (WRD) provides guidance to Division of Occupational Safety and Health (DOSH) enforcement and consultation staff initiating inspections or consultations at job sites where workers outdoors may be exposed to temperature extremes, radiant heat, humidity, or limited air movement, while working. It replaces all other instructions on this issue; whether formal or informal.

III. Compliance and Consultation Protocols

Are employers required to follow the WRD and use the Heat Stress Index (described on page 3)?

No. The WRD is intended to be specific guidance for DOSH staff on how to assess if there is a potential for workplace hazards. It is up to the employer to determine when applicable controls and methods should be implemented for their worksite.

How is DOSH staff expected to schedule inspections related to heat stress issues?

DOSH will use its regular workplace consultation and compliance programs to assess heat stress related working conditions.

How is DOSH staff expected to evaluate a work place for heat stress issues?

Staff are expected to determine if an employer has evaluated their workplace and assessed if their employees could be at risk for heat stress. Factors such as air temperature, humidity, workload, clothing insulation, personal protective equipment use, and employee reports of symptoms can be taken into consideration to make a reasonable determination of risk.

Staff will reference the Heat Stress Index (HSI) issued by the National Oceanic and Atmospheric Administration (NOAA) to predict risk. A copy of the Heat Stress Index is included in Appendix A of this WRD. DOSH, in exercising its enforcement discretion, has determined that **an HSI of 100 or higher** warrants the implementation of precautionary measures as outlined in the employer's Accident Prevention Program (APP) to ensure protection of employees to heat related illness or stress. **(NOTE: Employers may want to implement controls at a lower HSI, and are not required to use the table in Appendix A. It is up to the employer to determine when applicable controls and methods should be implemented for their worksite.)**

How should DOSH staff cite heat stress violations?

WAC 296-62-09013 must be cited when workers are exposed to high temperature or high temperature conditions and adequate controls, methods or procedures have not been implemented. For example, WAC 296-62-09013 should be cited when employers have not considered and implemented adequate controls to reduce employee's exposure to temperature extremes (an HSI greater than 100 is documented). This will be cited as a serious violation. If the HSI is less than 100, no citation will be issued.

The CSHO should check the OSHA 300 log for indications of prior heat stress symptoms/problems.

Assess if the employer included an element on heat related illness/stress (HRI) in their APP. The APP should describe:

- how the employer will assess risk for HRI,
- a training element that provides employees information on what the employer will do in hot weather work conditions,
- an element on first aid including how to identify HRI symptoms and proper first aid application for an individual that is suffering from HRI, and procedures for summoning medical aid personnel, and
- an element on ensuring adequate drinking water will be available.

These elements are the minimal elements an employer must address in their APP. If the employer does not have these elements in their APP and there has not been a day where the HSI has exceeded 100, a general violation will be issued for not tailoring the APP to the hazards associated with heat related illness. If the APP does not have these elements and there has been a documented HSI of 100 or greater at the time of the inspection, a serious violation will be issued.

Violations of specific industry requirements should be cited under the specific requirement. For example, construction employers who have not tailored their written accident prevention program to address heat hazards should be cited under WAC 296-155-110; in agriculture, the appropriate citation would be WAC 296-307-030, etc.

Pertinent rules for heat stress may be found in Appendix B or on L&I's heat stress web page:

<http://www.lni.wa.gov/safety/topics/atoz/heatstress/default.asp>

Ensure that employees have access to drinking water. Failure to have accessible drinking water when the HSI is at 100 or greater will be a serious violation of the applicable code.

Ensure that employees recognize the symptoms of HRI and know what to do in the event of a first aid event. Lack of training in this area will be cited as a serious violation of the applicable code.

The following are some questions for employer interviews: What are the potential sources of heat? What heat stress problems have been encountered? Are supervisors trained to detect/evaluate heat stress symptoms? Does the employer have procedures in place to address a heat stress illness?

Ask employees what heat stress problems or symptoms they have experienced? What type of action has the employee or employer taken to minimize heat stress? Are cool rest areas provided? Are employee's provided with sufficient breaks and or water during extreme temperatures? Are employee's aware of what the symptoms are for heat stress? Does the employer check on work crews more often during extreme temperatures?

What are some of the symptoms of heat stress related illnesses?

Heat cramps are painful muscle spasms that usually occur in the legs or abdomen. They are caused by the failure to replace fluids or electrolytes, such as sodium or potassium. Heat cramps are the least severe of heat related illnesses. Treatment includes moving a person to a cooler place, stretching muscles for cramps, and giving cool water or electrolyte-containing fluid to drink.

Heat exhaustion is an early indicator that the body's cooling system is becoming overwhelmed. Symptoms include headaches, dizziness, lightheadedness, or fainting; weakness and clammy or moist skin; mood changes such as irritability or confusion; upset stomach or vomiting. It can lead to heat stroke if ignored. Treatment includes moving the person to a cooler place, and if the person is conscious, providing small amounts of cool water to drink. Fan the victim to circulate the air while applying water with a cool cloth.

Heat stroke is a medical emergency caused by the failure of the body's cooling system. Symptoms include dry, hot skin with no sweating; mental confusion or losing consciousness; seizures or fits. Treatment includes all of the elements for heat exhaustion and contacting 911 immediately for medical assistance.

NOTE: Pesticide poisoning has similar symptoms as heat exhaustion.

Appendix C contains a document titled "Hot Weather Advisory", which includes information for employers and employees on working outdoors in hot weather.

How will training programs be evaluated?

Sample DOSH training materials are available on the L&I safety web site, and a sample APP can be found in Appendix D. All DOSH training materials are generic in nature and must be supplemented by the employer to include workplace specific information.

Safety training should include at a minimum:

- The environmental and personal risk factors for heat stress;
- The different types of heat stress and the common signs and symptoms of heat stress
- The employer's procedures for identifying, evaluating, and controlling exposure
- The employer's procedures for responding to symptoms of possible heat related illness, including a process to summon medical aid personnel

Safety training must be provided prior to job assignment. The employer should periodically evaluate the need for additional training (e.g., once a year).

Are there any special actions that compliance or consultation staff must take before issuing a citation or letter on a heat stress issue?

Yes. Any heat stress related citation must be reviewed by the Compliance Administrator or their designee prior to the closing conference. Any heat stress related letter that is to be issued by a consultant must be reviewed by the Consultation Administrator or their designee prior to being sent.

Will there be a transition period for enforcement?

Yes. Employers will be given a 30-day transition period to add the appropriate elements to their Accident Prevention Program, provide training, and ensure compliance with applicable standards. Compliance staff will not issue a citation related to heat stress prevention until after July 1, 2006.

Approved: _____
Stephen M. Cant, Assistant Director
Division of Occupational Safety and Health

For further information about this or other WISHA Regional Directives, you may contact DOSH Compliance Operations at P.O. Box 44648, Olympia, WA 98504-4648 -- or by telephone at (360) 902-5460. You also may review policy information on the DOSH website (<http://www.lni.wa.gov/Safety/>).

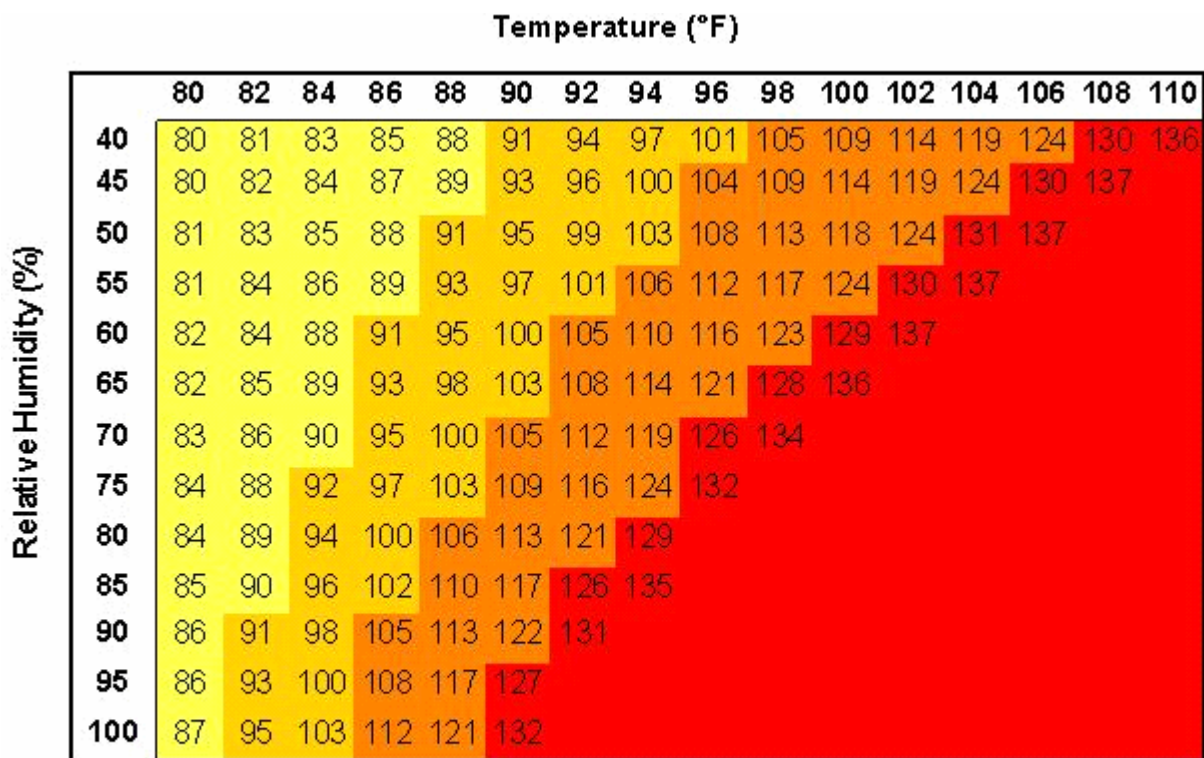
APPENDIX A

Attached is the National Oceanic and Atmospheric Association's Heat Stress Index (HSI). DOSH Staff are expected to use this index as a tool to determine if heat related illness/stress (HRI) may be a concern for an employer.

It has been determined that **an HSI of 100 or higher** warrants the implementation of precautionary measures requiring an inspector or consultant to ensure an employer has an Accident Prevention Program that addresses the elements listed in this WRD, adequate water, and appropriate first aid requirements to ensure protection of employees to heat related illness or stress.

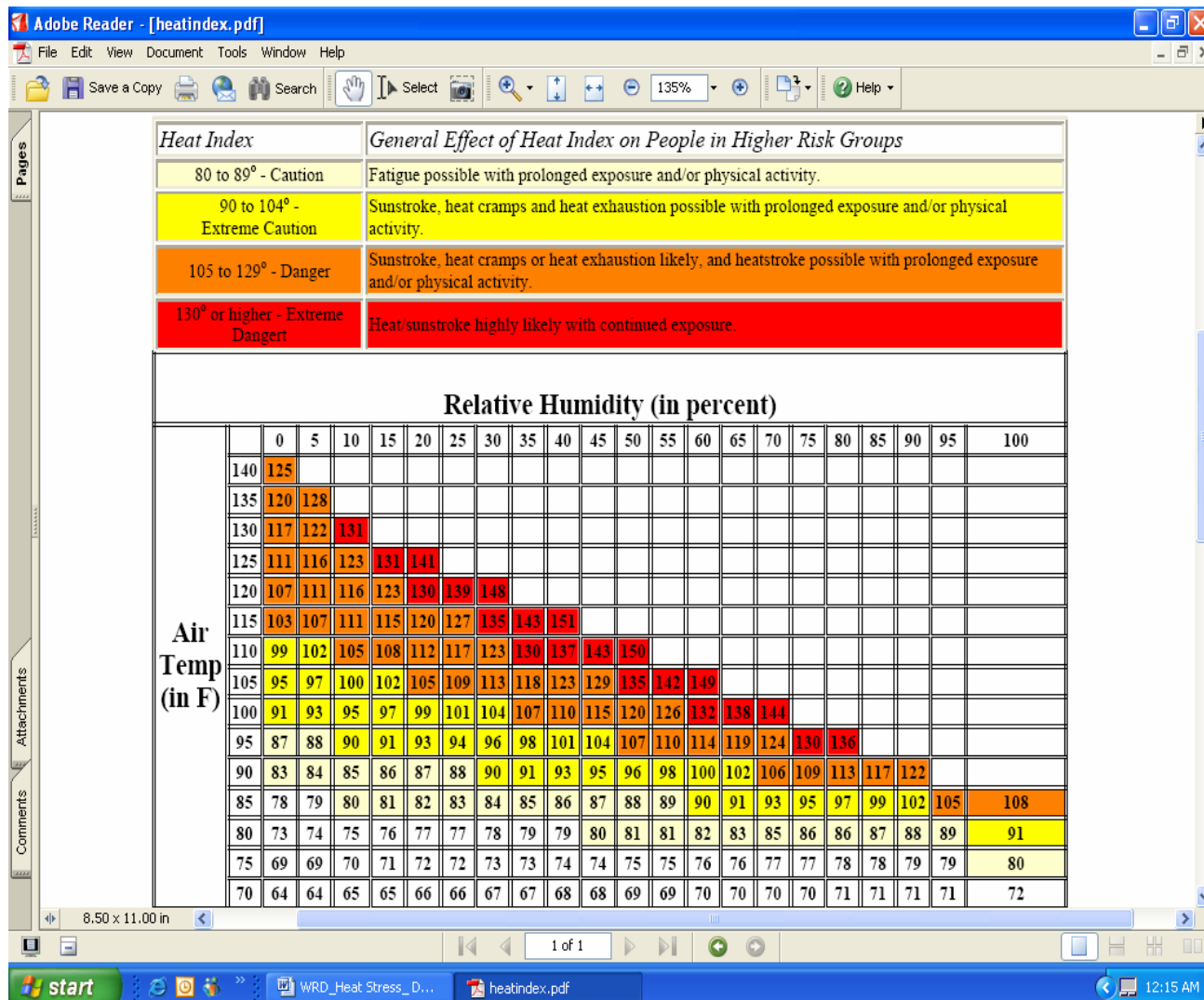
Employers are NOT required to use this graph to assess risk of HRI; they must determine when adequate controls and methods are needed for their worksite.

NOAA's National Weather Service Heat Index



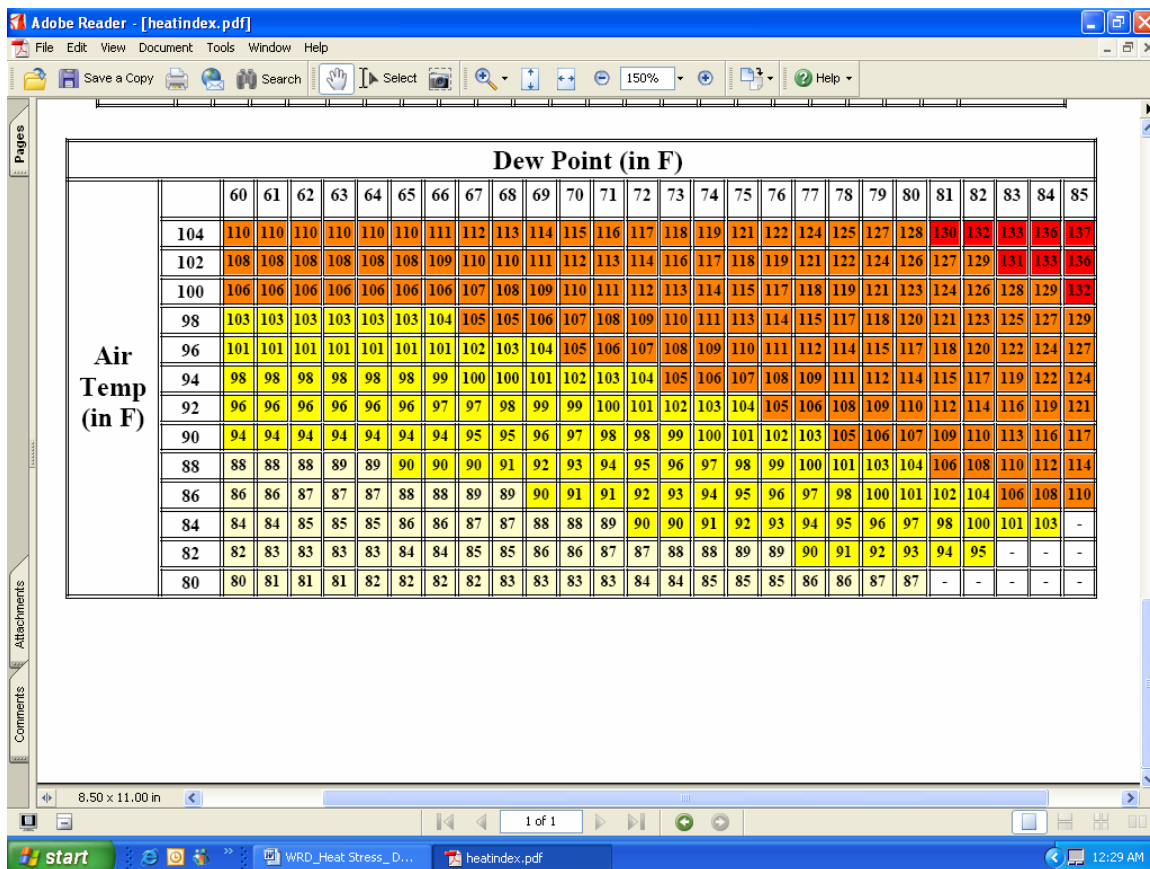
The chart below contains a broader range of relative humidity levels that may be helpful for an employer. DOSH personnel will not use this chart to determine if an employer is above an HSI of 100; it is strictly for informational purposes. This chart can be accessed at the following web site:

<http://www.crh.noaa.gov/dvn/tools/heatindex.pdf>



The chart below contains a different method of assessing a heat stress index by using Dew Point temperatures instead of relative humidity. This chart may be helpful for an employer. DOSH personnel will not use this chart to determine if an employer is above an HSI of 100; it is strictly for informational purposes. This chart can be accessed at the following web site:

<http://www.crh.noaa.gov/dvn/tools/heatindex.pdf>



APPENDIX B

Attached are the industry specific standards that are applicable for heat stress issues. This information may also be found at our L&I website:

<http://www.lni.wa.gov/safety/topics/atoz/heatstress/default.asp>

APPENDIX C

Attached is a “Hot Weather Advisory” document that was mailed to employers in early May. It contains information that an employer may want to use in their Accident Prevention Program or to share during a training session. This information may also be found at our L&I website:

<http://www.lni.wa.gov/safety/topics/atoz/heatstress/default.asp>

APPENDIX D

Below is a sample of what an employer may want to have in their Accident Prevention Program. It contains the minimal elements that DOSH personnel would be looking for in an employers APP. As with any instructional material provided by Labor and Industries, it is not all encompassing and would have to be modified to meet the needs of the employer's business and work environment.

Definitions:

“Heat Related Illness” (HRI) means a serious medical condition resulting from the body's inability to cope with a particular heat load, and includes heat cramps, heat exhaustion, heat syncope and heat stroke.

“Environmental risk factors for heat illness” means working conditions that create the possibility that heat illness could occur, including air temperature, relative humidity, radiant heat from the sun and other sources, conductive heat sources such as the ground, air movement, workload severity and duration, protective clothing and personal protective equipment worn by employees. These conditions will be considered when determining that (the employer) is implementing controls and methods to reduce the potential for heat related illness.

“Personal risk factors for heat illness” means factors such as an individual's age, degree of acclimatization, health, water consumption, alcohol consumption, caffeine consumption, and use of prescription medications that affect the body's water retention or other physiological responses to heat.

“Shade” means blockage of direct sunlight. Canopies, umbrellas and other temporary structures or devices may be used to provide shade. Some shade producing areas are not adequate to cool the body; for instance, a car sitting in the sun does not provide acceptable shade to a person inside it, unless the car is running with air conditioning.

Implementation of (the employer's) Heat Stress program:

(The employer would include how they determine when appropriate controls and methods should be put in place to ensure heat related incidents do not

occur to employees. This could be a pre-determined temperature, use of a heat index graph or any other method the employer deems appropriate.)

Training:

Employee training: Training in the following topics will be provided to all supervisory and non-supervisory employees:

- environmental and personal risk factors for heat illness
- procedures for identifying, evaluating, and controlling exposures to the environmental and personal risk factors for heat illness
- the importance of frequent consumption of water
- the importance of acclimatization
- the different types of heat illness and the common signs and symptoms of heat illness
- the importance of immediately reporting to the employer or designee symptoms or signs of heat illness
- procedures for responding to symptoms of possible heat illness, including how emergency medical services will be provided should they become necessary
- procedures for contacting emergency medical services, and if necessary, for transporting employees to a point where they can be reached by medical service personnel
- how to provide clear and precise directions to the work site

Supervisor training: Prior to assignment to supervision of employees working in the heat, training on the following topics will occur:

- the information provided for employee training
- procedures the supervisor will follow to implement controls as determined by the employer
- procedures the supervisor will follow when an employee exhibits symptoms consistent with possible heat illness, including emergency response procedures

Controls for reducing heat exposure:

(The employer would include how they will reduce the potential for heat stress to occur. This could be a work/rest regimen, starting jobs earlier and ending earlier to avoid the hot times of the day, provisions for gaining access to shade, identifying the onset of heat related symptoms and the methods used to cool an employee off, etc.)

Provisions for water:

(The employer would indicate where water would be stored, how employees will be encouraged to drink water on hot days, etc.)

First Aid awareness and actions in the event of a heat related illness:

(The employer would indicate in this section what the main types of heat related illnesses are, how to identify the symptoms of an employee being affected by the heat or experiencing one of the heat related illnesses, and the appropriate actions to take to reduce the effects of the heat related illness. One way to accomplish this would be through including the following definitions and training personnel on treatment options.)

Sample first aid awareness section:

Heat cramps are painful muscle spasms that usually occur in the legs or abdomen. They are caused by the failure to replace fluids or electrolytes, such as sodium or potassium. Heat cramps are the least severe of heat related illnesses. Treatment includes moving a person to a cooler place, stretching muscles for cramps, and giving cool water or electrolyte-containing fluid to drink.

Heat exhaustion is an early indicator that the body's cooling system is becoming overwhelmed. Symptoms include headaches, dizziness, lightheadedness, or fainting; weakness and clammy or moist skin; mood changes such as irritability or confusion; upset stomach or vomiting. It can lead to heat stroke if ignored. Treatment includes moving the person to a cooler place, and if the person is conscious, providing small amounts of cool water to drink. Fan the victim to circulate the air while applying water with a cool cloth.

Heat stroke is a medical emergency caused by the failure of the body's cooling system. Symptoms include dry, hot skin with no sweating; mental confusion or losing consciousness; seizures or fits. Treatment includes all of the elements for heat exhaustion and contacting 911 immediately for medical assistance.

NOTE: Pesticide poisoning has similar symptoms as heat exhaustion.